



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,998	06/22/2006	Yoshinobu Fukuda	ED-US030965	3377
22919 7590 03/05/2009 GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680				
EXAMINER				
LIGERAKIS, JOHN				
ART UNIT		PAPER NUMBER		
3655				
MAIL DATE		DELIVERY MODE		
03/05/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/583,998

Applicant(s)

FUKUDA ET AL.

Examiner

John V. Ligerakis

Art Unit

3655

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 21-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/35108)
- Paper No(s)/Mail Date 6/2/2006; 9/3/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species 1 - Figures 1-5 in the reply filed on August 29, 2008 is acknowledged. Claims 21-35 have been withdrawn. It is noted that applicant believes claims 24, 26, 27, 34, and 25 read on the elected species, however upon further consideration, the examiner is not in agreement with the listing. Claim 24 recites fixing units include a flange portion formed on one end of the shaft portion of the second fixing unit, which is not shown in Figures 1-5, but is in embodiment of Species 2. Claim 26 recites fixing units formed of a first fixing unit having a trunk portion inserted into the recess of the friction plate, which is not shown in Figures 1-5, but is in embodiment of Species 4. Claim 27 recites a coupling portion axially extending through the first fixing unit and fixing the flange portion to the first fixing unit, which is not shown in Figures 1-5, but is in embodiment of Species 6. Claim 34 recites a disk-like input plate arranged on a side of the flange portion and having an outer periphery portion coupled to the friction plate, which is not shown in Figures 1-5, but is in embodiment of Species 3.

Claims 1-20 are herein addressed below.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on June 22, 2006 and September 30, 2008 are acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Japanese Patent Application Publication No. 2003-90355 (See Spec, line 17) is not listed in the information disclosure statements, and has not been considered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the window hole portions 35a and 36a (claim 3), and the release device (claims 12 and 13) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: clutch plate 35, retaining plates 36, and window hole portions 35a and 36a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either

"Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: the reference characters 31, 31a, 31b, (See Figs. 1 and 2); 55a, 55b (See Fig. 4); and 7c, 12c, 90, 91, 92 (See Fig. 5) are described or referred to in the specification. In line 12 on page 28, "torsion springs 22" should read --torsion springs 32--; In line 6 on page 31, "body portion 45c" should read --body portion 45a--; In line 15 on page 31, "stop pin 45" should read --stop pin 45c--; In line 22 on page 31, "45c of the stop pin 45" should read --55c of the stop pin 55--; in line 22 on page 32, "notched portions" should read --inner peripheral projections--; and in line 23 on page 22, "electrically" should read --elastically--.

Appropriate correction is required.

Claim Objections

Claim 35 is objected to because of the following informalities: In line 2, "disk-like plate" should be replaced with --disk-like input plate--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 10, 12, 13, 15, 20, 34, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 9 and 10, lines 6, head portion lacks a proper antecedent basis. It is unclear which head portion, if not both, is required to have a larger outer dimension than the body portion.

In claims 12, 13, and 15, the first biasing member lacks a proper antecedent basis.

In claim 20, it is unclear what is considered to be the clutch disk body, which portion of the clutch disk body is considered to be the disk-like input portion, and how it is coupled to the friction plate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Fukuda et al. (GB 2 300 679 A).

Regarding claim 20, A clutch disk assembly (See Figs. 2, 3, and 4) for transmitting and intercepting a power from a flywheel (11) on an engine side (See Page 5, lines 7-8) to an input shaft of a transmission (See Page 6, lines 17-18), comprising: a clutch disk body (20) having a disk-like input portion (32) having an outer periphery portion (33S) coupled to an inner peripheral portion (23) of a friction plate (21), and an output portion (31) coupled to the input shaft of the transmission; and a plurality of fixing units (36, 37) directly coupling the outer peripheral portion (33S) of the disk-like input portion (32) to the inner peripheral portion (23) of the friction plate (21). The friction plate (21) being made of carbon (See Page 6, lines 9-11) and pressed against the flywheel (11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al (GB 2 300 679 A).

Regarding claims 1 and 2, Okazaki discloses (See Fig. 1) a multi-plate clutch device (1) for transmitting and cutting off, with respect to an output rotor (3), power from an engine input rotor (10), the multi-plate clutch device (1) comprising: a clutch disk assembly (14,15, 17, 18, 5, 6) being coupled to the output rotor (3) and disposed near

the input rotor (10); and a clutch cover assembly (7, 11) being coupled to the input rotor (10) and including a pressure plate (24) to press the clutch disk assembly towards the input rotor (10), the clutch disk assembly having a hub (14, 15) being coupled to the output rotor (3), a friction coupler (5, 6, 18) being disposed at an outer peripheral side of the hub (14, 15) and being nipped between the input rotor (10) and the pressure plate (24), and a damper mechanism (17, 19, 21) elastically coupling the hub (14, 15) and the friction coupler (5, 6, 18) in a rotation direction, the friction coupler having a ring member (18) being coupled to an outer peripheral side of the damper mechanism, a plurality of first friction plates (5) being disposed at an outer peripheral side of the ring member (18) and engaged with the ring member (18) to be relatively unrotatable and to be relatively movable in an axial direction, and a second friction plate (6) being disposed between the plurality of first friction plates (5) and being engaged with the clutch cover assembly (7, 11) to be relatively unrotatable and to be relatively movable in the axial direction. Okazaki fails to disclose friction plates being configured by a carbon composite material. Fukuda et al. discloses a clutch plate assembly (See Fig. 2) in which all of the friction plates are made of a carbon composite material (See Page 6, lines 9-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the first friction plates of the multi-plate clutch device disclosed by Okazaki with the carbon composite friction plates disclosed by Fukuda et al. to improve performance.

Regarding claim 3, Okazaki discloses the multi-plate clutch device as set forth above, wherein the hub (14, 15) includes a flange portion (15) that projects outward in a

radial direction around the entire periphery of the hub (14, 15) and a plurality of housing portions (21) formed by part of the flange portion (15) being cut out, and the damper mechanism (17, 19, 21) is disposed with a plurality of elastic members (17) housed in the housing portions (21) and a pair of coupler plates (19) that are disposed to be relatively rotatable with respect to the flange portion (15) in a state where the coupler plates (19) nip the flange portion (15) in the axial direction, with the coupler plates (19) being disposed with window hole portions (shown where elastic members meet with coupler plates) at positions corresponding to the elastic members (17).

Regarding claim 4, Okazaki discloses the multi-plate clutch device as set forth above, wherein the ring member (18) includes a plurality of outer teeth (See outer perimeter of 18 in Fig 1) formed around the entire outer peripheral side of the ring member (18) and projects outward in the radial direction, and the first friction plates (5) include a plurality of inner teeth that is formed around the entire inner peripheral sides of the first friction plates (5) and engages with the outer teeth.

Regarding claim 5, Okazaki discloses the multi-plate clutch device as set forth above, wherein the ring member (18) includes projecting portions (30) that are disposed between the plurality of first friction plates (5) and project further outward in the radial direction from the outer teeth.

Regarding claim 6, Okazaki discloses the multi-plate clutch device as set forth above, wherein the clutch cover assembly (7, 11) includes an annular clutch cover (12) and cover members (11 and couplings on outer periphery of 7 and 10) that are multiply disposed in the rotation direction and couple together the input rotor (10) and the clutch

cover (12), and the second friction plate (6) includes a plurality of notch portions that engage with the cover members.

Regarding claim 7, Okazaki discloses the multi-plate clutch device as set forth above, further including fixing members (20) that fix a part of the inner peripheral side of the ring member (18) in a state where the part of the inner peripheral side of the ring member (18) is nipped between the outer peripheral sides of the pair of coupler plates (19).

Regarding claim 8, Okazaki discloses the multi-plate clutch device as set forth above, wherein the ring member (18) includes a plurality of first engagement portions (See radially inward projections of 18 shown in Fig 2) that project inward in the radial direction, and the flange portion (15) includes second engagement portions (See radially outward projections of 15 in Fig 2) that project outward in the radial direction and contact with the first engagement portions when the second engagement portions rotate a predetermined relative angle.

Regarding claim 12, Okazaki discloses the multi-plate clutch device as set forth above, further comprising a release device (operating member, see [0027, line 3) engaged with a first biasing member (26) axially and elastically deforming the first biasing member (26), wherein the release device axially moves towards the input rotor (10) to release the biasing force applied by the first biasing member (26) to the pressure plate (24).

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Yoshikawa et al. (US Patent 6,581,259).

Regarding claims 9 and 10, Okazaki discloses the multi-plate clutch device as set forth above, wherein each of the fixing members (20) includes a body portion, head portions disposed at both ends and have a larger outer diameter dimension than that of the body portion, but fails to disclose a stepped or tapered portion that is disposed between the body portion and one of the head portions. Yoshikawa et al. discloses (See Fig. 17) a fixing member (10) which includes a body portion (upper portion of 11b) having a cylindrical shape, head portions (11c, 11d) that are disposed at both ends of the body portion and have a larger outer diameter dimension than that of the body portion, and a stepped portion (lower portion of 11b) that is disposed between the body portion and one of the head portions (11d) and has a larger outer diameter dimension than that of the body portion and a smaller outer diameter dimension than that of the head portions (11c, 11d). The stepped portion is tapered. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the fixing members disclosed by Okazaki with the stepped tapered portion disclosed by Yoshikawa et al. to improve fastening means.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Link et al (US 2002/0079188).

Regarding claim 11, Okazaki discloses the multi-plate clutch device with a pressure plate (24) as set forth above, but fails to disclose wherein the pressure plate is made of a material containing iron as a main ingredient. Link et al. discloses a pressure plate (16) made of a material containing iron as a main ingredient (See [0007]-[0014], and [0017], lines 1-4). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the pressure plate disclosed by Okazaki with the material disclosed by Link et al. to improve operating characteristics.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Loizeau (US Patent 4,790,419).

Regarding claim 13, Okazaki discloses the multi-plate clutch device as set forth above, further comprising a release device (operating member, see [0027], line 3) engaged with a first biasing member (26) axially and elastically deforming the first biasing member (26), wherein the release device axially *moves towards* the input rotor (10) to release the biasing force applied by the first biasing member (26) to the pressure plate (24). However, Okazaki fails to disclose a release device which moves *axially away* from the input rotor to release the biasing force. Loizeau discloses (See Fig. 1) releasing the biasing force (F_2) applied by a biasing member (17) when a release device moves axially away from the input rotor (11) (See Col 8, lines 7-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the release device which moves towards the input rotor to release the biasing force disclosed by Okazaki with the release device which moves axially away from the input

rotor to release the biasing force as disclosed by Loizeau to improve fit (See Col 8, lines 35-44).

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Kosumi et al. (US 5,904,234).

Regarding claims 14 and 15, Okazaki discloses an input rotor (10), an output rotor (3), a first biasing member (26), and a pressure plate (24) in the multi-plate clutch device as set forth above, but fails to disclose a second biasing member. Kosumi et al. discloses a multi-plate clutch (See Fig. 9) comprising a second biasing member (60) arranged between the first biasing member (26) and the pressure plate (24) and located between an input rotor (2) and an output rotor (See Col 7, lines 23-28), and having an elastic reaction force smaller than a pushing load applies to the first friction plate (8) for power transmission. It would have been obvious to one of ordinary skill in the art to provide the pressure plate disclosed by Okazaki with the second biasing member disclosed by Kosumi et al. to accommodate for warpage during high temperature conditions.

Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Braun (US Patent 4,548,309).

Regarding claims 16-18, Okazaki discloses the coupler plates (19) and the flange portion (15) of the multi-plate clutch device as set forth above, but fails to disclose an annular friction member or a third biasing member arranged between a coupler plate

and the flange portion. Braun discloses a clutch plate with coupler plates (4, 6); a flange portion (3); and an annular friction member (12) located between one of the coupler plates (6) and the flange portion (3); and an axially and elastically deformable Belleville spring as an annular third biasing member (10) arranged between one of the coupler plates (6) and the flange portion (3). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the coupler plates and flange portion of the multi-plate clutch device disclosed by Okazaki with the annular friction member and annular third biasing member disclosed by Braun for centering and supporting relative movement between coupler plates and the flange portion.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (JP 2002-195290) in view of Fukuda et al. (GB 2 300 679 A) and Braun (US Patent 4,548,309) and Satou et al. (US Patent 6,026,944).

Braun discloses the annular third biasing member of the multi-plate clutch device as set forth above, but fails to disclose the annular third biasing member is formed of an axially and elastically deformable wavy spring. Satou et al. (See Fig. 7) discloses an elastically deformable wavy spring (33). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the Belleville spring disclosed by Braun with the elastically deformable wavy spring disclosed by Satou et al. reduce parts wear.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ligerakis whose telephone number is (571) 270-3278. The examiner can normally be reached on M-Th 8am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on (571)272-7095. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9179 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

/John V Ligerakis/

Examiner, Art Unit 3655

/CHARLES A. MARMOR/

Supervisory Patent Examiner, Art Unit 3655